

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

For: METHOD TO CONTROL REACTIONS
INVOLVING ISOTOPIC FUEL
WITHIN A MATERIAL USING
ORTHOGONAL ELECTRIC-FIELDS

Serial no. 09/ 748,691

Filed: 12/26/2000

This is a division of Serial no. 07/ 760,970

Filed: 09/17/1991

Examiner: Palabrica, R.J.

November 4, 2002

**Declaration of
Dr. Mitchell R. Swartz**

I, Mitchell R. Swartz, declare that I am a citizen of the United States of America and the inventor of the invention described in the above-identified application.

1. I have earned the degree of Doctor of Science in Electrical Engineering from the Massachusetts Institute of Technology, as well as the degrees of Electrical Engineer, Master of Science, and Bachelor of Science from MIT, and a Doctorate of Medicine from Harvard Medical School. I have worked with radiation sources and nuclear materials, including those used in nuclear and radiation medicine, for more than fifteen years. I am the inventor of a number of United States patents [4,243,751, 4,139,348, 4,346,172, 4,181,128, 4,305,390, 4,402,318, and 4,681,839]. I have worked and published in this field for more than a decade.

2. I have studied Examiner's cited references, statements and arguments. Having fully reviewed the responses of the Examiner and having weighed the references as to matters of fact as discussed in detail below, I hereby respectfully submit that some statements and opinions of the Office appear to be in error. Based upon the facts, discussed in detail below and in "Applicant's Response To The Communication of 9/5/02", the present invention specified in the above-entitled Application is novel, is not obvious, and does have significant utility.

3. I respectfully dispute rejection of Claims 1-14 under 35 U.S.C. 102 (b) as being anticipated by Westfall (US 5,215,631), Claims 1, 2, 10 and 11 under 35 U.S.C. 102 (b) as being anticipated by Kinsella (U.S. 3,682, 806), Claims 1-7, 10-12, and 14 under 35 U.S.C. 103(a) as being unpatentable over either one of Cedzynska et al. (WO 93/01601) or Edwards (WO 90/15416) in view of Westfall, Claims 8, 9 and 13 under 35 U.S.C. 103(a) as being unpatentable over Cedzynska et al. in view of Westfall, as applied to claims 1-7, 10-12, and 14 above, and further in view of anyone of Edwards, Sadoway (WO 91/06959) or Van Noorden (NL 8909-962-A) or Dufour (WO 91/01036), and Claims 1-14 under 35 U.S.C. 101 and 35 U.S.C. 112 by the Examiner, based upon flawed reference to other art ("FP" or "F+P").

4. The Examiner is incorrect. There is now no new matter or issues. Hydrogen storage and nuclear fusion are absolutely not new matter or new material because hydrogen loading and storage in palladium, and nuclear fusion, and other reactions were discussed in detail in the original specification, from which the present application is a Continuation. The present application has no new matter over the original filing.

5. The application '970 -of which the present invention '691 is a continuation of- was filed 9/17/91 earlier than most of the cited art which is not relevant as discussed herein and in the accompanying "Applicant's Response To The Communication of 9/5/02" for the sake of argument.

6. Several claims have been amended pursuant to the Examiner's comments regarding 35 USC 112, second paragraph. Claims 21 through 30 have been added, using language explicitly taken from the original specification and claims, of which

this application is the Continuation. There is no new matter or new material. The language is exactly that of the original specification and claims.

7. Westfall discloses a process and an apparatus for growing large crystals by electrodeposition. Westfall, as discussed therein, grows enlarging metal crystals as shown in figures 2a through 2d, therein. Westfall's invention is to produce dendritic crystals and explicitly involves ribbon crystal and crystalline growth systems with growth rates (deposition rates) of 4.2 feet per hour in linear growth rate (column 36 lines 17 through 22). In Westfall, the crystals grow to become freestanding single crystals of tin in its cubic and tetragonal forms. Westfall uses said grown crystals to make photovoltaic cells, as discussed in column 13, lines 55 through 66. Westfall's crystals, grown at 4.2 feet per hour, do not have the purpose, advanced technology, features, and advantages of the present invention. Westfall's invention, a process and an apparatus for growing crystals of tin in its cubic and tetragonal forms controls ions OUTSIDE of the enlarging metal crystals (figures 2a through 2d, therein). Westfall refers to saturation OUTSIDE of the metal crystal and is an entirely different teaching from the present invention.

8. Westfall admits that the apparatus of Westfall is no more than a means to a process and an apparatus for growing crystals by electrodeposition with rapid metal growth rates at 4.2 feet per hour (column 36 lines 17 through 22). Westfall admits it makes photovoltaic cells (column 13, lines 55 through 66). Westfall also admits that crucibles must be chosen which are able to survive corrosive molten salt baths (column 32 lines 55 through 59). Unlike Westfall, '691 teaches a method to produce a product which includes in combination supplying an isotopic fuel to said material, loading said isotopic fuel into said material by an applied electric field, and then at a later point in time applying a second applied electric field to redistribute said isotopic fuel within said material, including using barriers impermeable to the flow of said isotopic fuel within said material. This is clearly shown in the Figures, and discussed, in the original specification of 691.

9. Kinsella (U.S. 3,682, 806) --as it claims-- is simply a process for electroplating metallic articles with carboxylic film-forming materials in a process utilizing lithium hydroxide as solubilizer (see Fig. 1 and column 8, 2nd paragraph). Kinsella demonstrates the most rudimentary of an electroplating process and it does

not have the purpose, advanced technology, features, and advantages of the present invention.

Kinsella, uses a stainless steel cathode, and only a one stage process. Kinsella uses no loading, or has no features of the present application. Corroborating this, from Kinsella, the Examiner quotes that 'Fig. 1 shows the anode (4), which is the material to be coated, a stainless steel cathode (6)'. Furthermore, as additional further proof in Kinsella the text explicitly states, as the Examiner quotes 'An alternative embodiment can have an auxiliary platinum anode (7) and an auxiliary stainless steel cathode (8)'.

10. Kinsella's process is for the purpose of electroplating metallic articles with carboxylic films. Attention is directed to the fact that Kinsella uses an auxiliary platinum anode ("7", column 10 line 15) which is not needed in the present invention, as the described in the original specification and claims. Furthermore, in Kinsella all applied electric field intensities are synchronous in time, whereas in '691 they are applied metachronously (at different points in time).

The 'electrodeposition current' cannot read on 'loading of isotopic fuel into material' because in Kinsella, unlike the present invention where there is a specialized palladium (or other hydrogen loading) cathode, there is only a stainless steel cathode (6). Furthermore, Kinsella uses a cationic membrane to divide the cathodic compartment (number 1 in Kinsella, column 9 line 65), a regenerated ion exchange resin (column 10 line 14), a auxiliary platinum anode ("7", column 10 line 15), a selective electrodialysis membrane to contain ion exchange resin ("9" and "12", column 10 lines 19-23), and a solubilized feed makeup material introduced to the anode ("11", column 10 line 11) which are not needed in the present invention, or used therein for the purposes which Kinsella states. This proves that the present invention has significant novelty and non-obviousness.

11. I have again submitted to the Examiner several peer-reviewed published papers which demonstrate enablement. These include Hagelstein, Swartz, MIT RLE Progress Report, 139: 1, 1-13 (1997); Swartz, Fusion Technology, 31, 228-236 (1997); ICCF-4, (1994); J.New Energy, 1,4,26 (1997); M.Swartz, 1992, "Quasi-One-Dimensional Model of Electrochemical Loading of Isotopic Fuel into a

Metal", *Fusion Technology*, 22, 2, 296-300; Swartz, M., 1994, "Isotopic Fuel Loading Coupled To Reactions At An Electrode", *Fusion Technology*, 96, 4T, 74-77; "Codeposition Of Palladium And Deuterium", *Fusion Technology*, 32, 126-130 (1997); Swartz, 1994, "Generalized Isotopic Fuel Loading Equations", *"Cold Fusion Source Book"*, International Symposium On Cold Fusion And Advanced Energy Systems", Ed. H.Fox, Minsk, Belarus; Swartz, 1997, Swartz. M., "Generality of Optimal Operating Point Behavior in Low Energy Nuclear Systems", *Journal of New Energy*, 4, 2, 218-228 (1999), Swartz. M., Improved Electrolytic Reactor Performance Using π -Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85); and Swartz. M., G. Verner, A. Frank, H. Fox "Importance of Non-dimensional Numbers and Optimal Operating Points in Cold Fusion", *Journal of New Energy*, 4, 2, 215-217 (1999); Swartz. M., 1997, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material", *Fusion Technology*, 31, 63-74, Swartz, 1997, "Phusons in Nuclear Reactions in Solids", *Fusion Technology*, 31, 228-236 (1997); Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, *"Proceedings: Fourth International Conference on Cold Fusion"* sponsored by EPRI and the Office of Naval Research; and Swartz, 1997, "Hydrogen Redistribution By Catastrophic Desorption In Select Transition Metals", *Journal of New Energy*, 1, 4, 26-33].

12. To rebut the Examiner, I have again submitted to the Examiner several Declarations and testimony by those skilled-in-the-art. The Declarations substantially and fully address all matters and issues criticized by the Examiner, and contain averments regarding evidence establishing the utility, validation, and operability of the Applicant's claimed subject matter. These include the Straus (4/22/94), Swartz, and other Declarations, including but not limited to the Amicus Curiae Briefs of Edmund Storms (2/21/01), Talbot Chubb (2/22/01), Eugene Mallove (3/24/00) and Hal Fox (2/21/01). Said Declarations are accompanied by statements supporting their introduction including full and explicit showing of good and sufficient reasons why they were not presented earlier (including that they are already in the preceeding file folder).

13. This invention is not just about cold fusion, but a method to produce a product which includes in combination supplying an isotopic fuel to said material, loading said isotopic fuel into said material by an applied electric field, and then at a later point in time applying a second applied electric field to redistribute said isotopic fuel within said material, including using barriers impermeable to the flow of said isotopic fuel within said material. This diversity of use is consistent with the directive of the court [In re Swartz 00-1107 and In re Swartz 00-1108]. It is only by calling the present invention "cold fusion", instead of a method to produce a product which includes in combination supplying an isotopic fuel to said material, loading said isotopic fuel into said material by an applied electric field, and then at a later point in time applying a second applied electric field to redistribute said isotopic fuel within said material, including using barriers impermeable to the flow of said isotopic fuel within said material, that the Examiner can purport that the heat measurement is "unattainable" and continue the Examiner's unfounded attack. If the Examiner must rely upon reference to art cut of a cloth other than this specification and claims, then his position must indeed be quite weak.

14. There is documented existence of these reactions and the preferred environment in which the present invention does operate. The number of papers in this field confirms both the "existence" and "utility" of these phenomena and any associated technologies.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: November 4, 2002

Inventor:

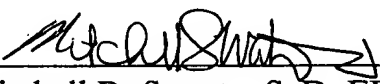
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